

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 17

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte T. JAY CAMERON and STANLEY H. DINSMORE

Appeal No. 1998-3369
Application No. 08/546,295

HEARD: February 20, 2001

Before FLEMING, DIXON, and GROSS, Administrative Patent Judges.
GROSS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1 through 8. Claims 9, 11 through 14, 16, and 17 have been allowed. Claims 10 and 15 have been cancelled.

Appellants' invention relates to a disc drive with an actuator and a means for retracting the actuator to a park position. The retraction means applies discrete voltage levels as a series of timed, stepped voltages of increased magnitude to driver circuitry which drives a voice coil motor

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that positions the actuator. Claim 1 is illustrative of the claimed invention, and it reads as follows:

1. A disc drive having a disc and an actuator adjacent the disc, the disc having a plurality of concentric data tracks, the actuator having a coil of a voice coil motor, the disc drive having control circuitry for positioning the actuator with respect to a selected data track, the control circuitry including driver circuitry for driving the voice coil motor to position the actuator through the controlled application of current to the coil, the disc drive comprising:

voltage generation means for generating a plurality of discrete voltage levels; and

retraction means, responsive to the voltage generation means, for applying the discrete voltage levels as a series of timed, stepped voltages of increased magnitude to the driver circuitry to retract the actuator to a park position, the retraction means applying the series regardless of the initial radial position of the actuator, the retraction means causing the driver circuitry to operate as a voltage source for the coil so that voltages established across the coil by the driver circuitry are maintained regardless of the flow of current through the coil as the actuator is retracted.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Onodera	4,807,062	Feb. 21,
1989		
Nakatsu et al. (Nakatsu)	4,887,254	Dec.
12, 1989		
Touchton et al. (Touchton)	4,967,291	Oct. 30,
1990		

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Claims 1 through 3 and 6 through 8 stand rejected under 35 U.S.C. § 103 as being unpatentable over Nakatsu in view of Onodera.

Claims 4 and 5 stand rejected under 35 U.S.C. § 103 as being unpatentable over Nakatsu in view of Onodera and Touchton.

Reference is made to the Examiner's Answer (Paper No. 10, mailed January 29, 1998) for the examiner's complete reasoning in support of the rejections, and to appellants' Brief (Paper No. 9, filed October 28, 1997) for appellants' arguments thereagainst.

OPINION

We have carefully considered the claims, the applied prior art references, and the respective positions articulated by appellants and the examiner. As a consequence of our review, we will reverse the obviousness rejection of claims 1 through 8.

Nakatsu discloses determining the position of the actuator, applying a reference voltage based on the position to move the actuator to a first predetermined position, and then applying a second reference voltage to move the actuator

to a second predetermined position (i.e., the parked position). Nakatsu's applied voltage varies according to the position of the actuator. As indicated by the examiner (Answer, page 4), Nakatsu does not teach using a plurality of discrete voltage levels.

Onodera, on the other hand, discloses applying a retract signal to the actuator and then repeatedly detecting the position of the actuator and increasing the current if the actuator has not yet reached the landing zone (or parked position). The purpose of Onodera's retraction method is to insure that a strong enough drive force is delivered for the actuator to reach the parked position without the drive force being so strong that the actuator forcibly collides with a stopper (see column 2, lines 42-50).

The examiner indicates (Answer, page 4) that it would have been obvious to apply Onodera's method of retracting the actuator to Nakatsu's disc drive to insure that the actuator reaches the parked position without crashing into the crash stop. We need not determine the obviousness of combining the two references, as even if one skilled in the art would have

been motivated to combine the two references, as stated by appellants (Brief, page 8), the references use "circuitry that differs both in structure and operation from circuitry that includes the voltage generation and retractions [sic, retraction] means recited in the ... claims."

35 U.S.C. § 112, paragraph 6, states that an element expressed only as a means-plus-function is to be construed to cover the corresponding structure described in the specification and equivalents thereof. Thus, in construing means-plus-function language in a claim one must interpret that language in light of the corresponding structure described in the specification, and equivalents thereof. See In re Donaldson Co., 16 F.3d 1189, 1193, 29 USPQ2d 1845, 1849 (Fed. Cir. 1994).

Claims 1 and 8 each recite a voltage generation means and a retraction means. Turning to appellants' drawings and specification, we find that the claimed voltage generation means corresponds to voltage generator 84, which generates multiple voltages which are provided to analog multiplexor 88 each via a separate signal path. The claimed retraction means corresponds to 4 bit counter 86 and analog multiplexors 88 and

60. They function to sequentially apply the series of voltages to the h-bridge driver which drives voice coil 36.

Nakatsu, as stated above, fails to generate or apply a plurality of discrete voltage levels. Therefore, we must review Onodera for the claimed voltage generation means and retraction means. Onodera generates a current based on voltage V and resistor 20 or 21 and applies that current to relay circuit 2 through motor control circuit 4 and motor drive circuit 3. Onodera does not disclose any voltage generator for generating plural voltages nor a 4 bit counter and two analog multiplexors as disclosed by appellants for the voltage generation means and retraction means, respectively. Furthermore, the generation and application of increasing currents according to the position of the actuator functionally differs from appellants' generation and application of multiple voltages, and therefore cannot be considered equivalents under 35 U.S.C. § 112, paragraph 6. Accordingly, we cannot sustain the rejection of claims 1 through 3 and 6 through 8.

Claims 4 and 5 depend from claim 1 and therefore include the limitations found lacking from the combination of Nakatsu

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and Onodera. The examiner adds Touchton to the combination to reject claims 4 and 5, but Touchton fails to cure the deficiencies of Nakatsu and Onodera. Accordingly, we cannot sustain the rejection of claims 4 and 5.

CONCLUSION

The decision of the examiner rejecting claims 1 through 8 under 35 U.S.C. § 103 is reversed.

REVERSED

MICHAEL R. FLEMING)	
Administrative Patent Judge)	
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)	
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)	BOARD OF PATENT
JOSEPH L. DIXON)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
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ANITA PELLMAN GROSS)	
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